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ABSTRACT

The effects of systematically varying the administration procedure of the Wechsler Intelligence Scale for Children (WISC) for Anglo and Spanish American children were studied. Procedures used were standard, verbal feedback and monetary feedback for correct answers. Ninety rural 5th grade students from southern New Mexico were divided into 3 groups by socioeconomic status (SES): 30 Anglos from lower-SES, 30 Anglos from middle-SES, and 30 Spanish Americans from lower-SES. The WISC was administered to one-third of the children in each ethnic SES group under the standard administration procedure, one-third received it under verbal feedback, and one-third received it under monetary feedback. All WISC's were administered and scored by a single examiner. The findings were: (1) the only significant results were produced by group membership as defined by SES or ethnicity; (2) the performance level for the Anglo students did not change when additional information or incentive is offered during its administration; and (3) no significant evidence was found to warrant altering test administration procedures for rural, 5th grade lower-SES Spanish American students and lower- and middle-SES Anglo students. (Author/NQ)

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THE EFFECTS OF VERBAL AND MONETARY FEEDBACK ON THE WISC SCORES OF LOWER-SES SPANISH AMERICAN AND LOWER- AND MIDDLE-SES ANGLO STUDENTS

BY

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A Dissertation submitted to the Graduate School
in partial fulfillment of the requirements
for the Degree
Doctor of Education

Major Subject: Counseling and Educational Psychology

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New Mexico State University
Las Cruces, New Mexico
April 1973

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ABSTRACT

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Since its publication in 1949 the WISC has become one of the most valuable diagnostic tools available to clinicians. Recent surveys have indicated that the special groups of children seen by clinicians contain a majority of individuals from racial and ethnic groups other than Caucasian. Since only white children were included in the standardization sample for the WISC, it is imperative that research be conducted using the WISC and groups of children who differ from the standardization sample.

The purpose of the present study was to ascertain the effects of

systematically varying the administration procedure of the WISC for Anglo and Spanish American children. The administration procedures were: (a) standard, (b) verbal feedback for correct answers, and (c) monetary feedback for correct answers. The experimental sample consisted of 90 rural fifth grade public school students from southern New Mexico. Anglo students were both lower-SES (n = 30) and middle-SES (n = 30). All Spanish American students were lower-SES (n = 30). Socio-economic status was defined through the use of the Hollingshead Two Factor Index of Social Position. Prior to administering the WISC all groups were equated for IQ scores on the basis of the Total IQ score from the Short Form Test of Academic Aptitude.

The WISC was administered to all children in the experimental sample. One-third (n = 10) of the children in each ethnic/SES group received the WISC under the standard administration procedure, one-third received the WISC under the verbal feedback for correct answers ("correct" or "right") administration procedure, and one-third received the WISC under the monetary feedback for correct answers (a penny for each correct answer) administration procedure. All WISC's were administered and scored by a single examiner.

Two statistically significant results were obtained when the WISC data were analyzed. First, a main effect difference for SES was obtained when Full Scale IQ scores were analyzed for lower- and middle-SES students. This difference indicated that lower-SES Anglos obtained mean Full Scale IQ scores which were significantly lower than middle-SES Anglos. Second, a main effect difference for group (lower-SES Spanish American students,

and lower- and middle-SES Anglo students were included in this analysis) was obtained when Verbal IQ scores were analyzed. This difference indicated that lower-SES Spanish Americans obtained mean Verbal IQ scores which were significantly lower than middle-SES Anglos.

The following conclusions were reached as a result of the study: (a) group membership, as defined by SES or ethnicity, appeared to produce the only significant results which were detected, (b) the level of performance for lower- and middle-SES Anglo students on the WISC is rather insensitive to change when additional information or potential incentive is offered during test administration, and (c) strong enough evidence is not provided which would warrant the recommendation that test administration procedures for the WISC should be altered for rural, fifth grade lower-SES Spanish American students and lower- and middle-SES Anglo students.

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Chapter 1

INTRODUCTION

Since its publication in 1949, the Wechsler Intelligence Scale for Children (WISC) has become widely used (Zimmerman & Silverman, 1967; Anastasi, 1968) and quite extensively researched (Littel, 1960; Buros, 1965). The extensive usage both in clinical settings and research appears to be the result of three distinct features: (a) a careful selection of the standardization sample, (b) a well planned format for the test, and (c) the author's conception of intelligence as a complex trait or combination of traits which can be manifested and measured in various ways (Wechsler, 1943; 1949; 1950; 1958).

Wechsler (1949) based the selection of his standardization sample on the data from the 1940 U.S. Census. The variables of sex, age, geographic area, parental occupation, and place of residence (rural-urban) were strata for the standardization sample. A total of 2200 white children was included in the sample. Though no explicit statement was made concerning the applicability of the scale to all children, as had been the case with the WAIS (Wechsler, 1958), at least the notion may be inferred that this was the intention of the careful sampling procedure.

In an attempt to consider some of the technical facets of the WISC standardization procedure, Seashore, Wesman, & Doppelt (1950) and Seashore (1951) examined the sampling data with regard to IQ differences between and within sampling strata. Their examinations indicated the following: (a) a slight, but negligible sex difference

within and between certain age groups, (b) a tendency for urban children to score higher than rural children, (c) a tendency for mean scores to differ for children of different parental occupational groups, and (d) children with no discrepancy between Verbal and Performance IQ were the exception rather than the rule, even though for the total sample the mean difference was zero. Thus, the carefully stratified standardization sample appears to fulfill many of the technical requirements set forth for psychometric instruments (American Psychological Association, 1966).

In spite of these technical qualities, the WISC has been criticized mainly for the variables which were not included in the standardization sample, i.e. the variables of race and/or ethnicity (Anastasi, 1968; Rankin & Henderson, 1969; Griffiths, 1971). These criticisms are in part justified because the WISC has found its greatest applicability for groups of children usually referred to school counselors or school psychologists for special attention (Zimmerman & Silverman, 1967). Recent surveys (Dunn, 1968; Chenault, 1971; Franks, 1971) have indicated that these special groups of children contain a majority of individuals from racial and ethnic groups other than Caucasian. Because of the failure to take the variables of race and ethnicity into consideration in the initial standardization procedure for the WISC, it is imperative that research be conducted concerning the applicability of the WISC to groups of children who differ from the standardization sample. The present study can be considered an effort in this direction.

As mentioned previously, the WISC has gained popularity both as a clinical and research instrument because of its author's conception of intelligence. Wechsler (1943; 1949; 1950; 1958) has discussed at length his concept of intelligence as the global capacity to behave "intelligently" both in and out of the testing session. He has stressed that nonintellective factors, such as persistence, drive, energy level, etc., contribute to the score as a function of both the characteristics (contents) of the test and the circumstances under which it is administered. As a result of this concept of intelligence, and a format which is divided into subtests, the WISC has been the subject of controversy concerning verbal and nonverbal measures of intelligence.

Littel (1960), in an extensive review of the WISC and related literature, concluded that the WISC does not have an adequate rationale. His conclusion was that Wechsler's comments applied mainly to the Wechsler Adult Intelligence Scale and it was not at all apparent how the definition of intelligence had been operationalized during construction of the WISC. Several contemporary discussions on the complexity of intelligence and the relevancy of intelligence tests for minority groups (Fishman, Deutsch, Kogan, North, & Whitman, 1964; Ross, DeYoung, & Cohen, 1971), have pointed out that continual research should be conducted concerning the applicability of the different types of instruments, i.e. verbal and performance, for these individuals. The present research study is an attempt to examine the WISC, which contains a variety of test items, and compare its use for groups of culturally different children.

Considerable thought and research effort has been given to the conjecture that test administration procedures and test content, as exemplified by the WISC, are extensions of the regular classroom situation. To the extent that this may be true, evidence exists suggesting that Negro and lower socio-economic status (SES) groups of children will not perform in a manner which allows them to demonstrate their maximum skills and abilities (Sweet, 1969; Gottlieb, 1964). It can be speculated that some of the reasons for this "underperformance" may be the nonintellective factors of persistence, drive, or energy level outlined by Wechsler (1950, 1958). Thus, what is normally considered error variance and assumed to be distributed randomly within a testing population, may in essence be a legitimate set of variables which may manifest itself differentially in groups of culturally and ethnically different children. It can be further speculated that if more meaningful administration procedures can be devised, certain variables can be accounted for with groups of minority children and thereby enhance the value of the WISC as an instrument for assessing intellectual abilities. The present study is an attempt to examine some of the above mentioned variables by looking at the performance of both Spanish American and Anglo children from differing socio-economic levels while using three different procedures for administering the WISC.

Two recent studies have been conducted using experimental conditions similar to the present study. Fast (1967) used two experimental procedures for WISC administration, i.e. verbal feedback for correct answers and monetary feedback (pennies) for correct answers. The children in the

study were 60 white male fifth and sixth grade students divided into lower-SES and middle-SES groups on the basis of Warner's Index of Social Characteristics. A test-retest procedure, with a three month interval, was utilized. The results indicated there was no significant difference between the performance of the children on the different administrations of the WISC. On the basis of these results, Fast (1967) concluded that the standard testing motivation in individual IQ testing, as currently employed, probably is not a factor working to the detriment of lower-SES children.

Sweet (1969) used the Verbal subtests of the WISC and worked with a sample of 72 middle-SES whites, 48 lower-SES whites, and 36 lower-SES Negroes. The main findings of the study were as follows: (a) middle-SES whites did not differ in performance across treatments, (b) lower-SES whites performed better under both verbal and monetary feedback, and (c) lower-SES Negroes tested under conditions of monetary feedback did not differ from lower-SES Negroes tested under standard or verbal feedback procedures.

The results of the previous two studies present some conflicting conclusions. First, Fast (1967) had fully expected to raise the score level of lower-SES white students via either verbal or monetary feedback conditions. Second, Sweet (1969) obtained two unpredicted results; i.e. the improved performance of lower-SES white children under verbal feedback conditions and the failure of monetary feedback conditions to raise the scores of lower-SES Negroes. In an attempt to examine verbal and/or tangible feedback and its effects on WISC

scores, the present study was undertaken.

An extended review of related research is provided in Appendices B-E.

Purpose of the Study

The purpose of the present study was to ascertain the effects of systematically varying the administration procedures of an individual test of intelligence for well defined groups of children. More specifically, the study examined the effects of the following three administration procedures for the WISC: (a) standard, (b) verbal feedback for correct answers, and (c) monetary feedback for correct answers. The experimental sample consisted of rural fifth grade Anglo and Spanish American public school students from southern New Mexico. Anglo students were both lower and middle socio-economic status (SES) and all Spanish American students were lower socio-economic status.

Hypotheses

The following null hypotheses were tested:

1. There will be no differential treatment effect, on WISC Verbal, Performance, and Full Scale IQ scores, for lower-SES Anglo rural fifth grade students.
2. There will be no differential treatment effect, on WISC Verbal, Performance, and Full Scale IQ scores, for middle-SES Anglo rural fifth grade students.
3. There will be no differential treatment effect, on WISC Verbal, Performance, and Full Scale IQ scores for lower-SES and middle-SES Anglo rural fifth grade students when

considered together.

4. There will be no differential treatment effect, on WISC Verbal, Performance, and Full Scale IQ scores, for lower-SES Spanish American rural fifth grade students.

Chapter 2

METHOD OF INVESTIGATION

The following section includes a discussion of the sampling procedure and sample, instrumentation, experimental procedures, and the statistical techniques utilized for computing and analyzing the results of the study.

Sampling Procedure and Sample

In February, 1972 eight rural school districts in Southern New Mexico were contacted and asked to participate in the study. Four districts, Alamogordo, Cloudcroft, Hatch Valley, and Las Cruces, agreed to participate. Two of the districts, Cloudcroft and Hatch Valley, were considered as completely rural because there were no urban areas within the districts as defined by the U.S. Bureau of the Census (1971). The remaining two districts, Las Cruces and Alamogordo, were considered as urban and rural in nature because urbanized areas existed within the districts. The students who were initially considered for inclusion in the study were drawn from the completely rural districts of Cloudcroft and Hatch Valley and two rural schools in the Las Cruces district, Dona Ana and Fairacres. The students from the Alamogordo district were not included because it was anticipated that enough students were available in the other districts and the amount of travel needed to complete the study was reduced by their exclusion.

The variables considered during sample selection from the above-

mentioned schools were: (a) grade level, (b) age, (c) Short Form Test of Academic Aptitude (SFTAA) Total IQ score, (d) ethnicity, and (e) socio-economic status (SES) as determined from ISP scores on the Hollingshead Two Factor Index of Social Position (1957). The overall purpose for considering these variables was to establish an experimental design matric (2 x 2 x 3); i.e. lower-SES and middle-SES, Anglo and Spanish American fifth grade students, and three administration procedures for the WISC, with cell sizes of ten (Total n = 120) in which the groups were equated for SFTAA Total IQ scores and as homogeneous as possible with regard to age. Table 1 was developed to show the overall sample selection process.

Fifth grade enrollment status was ascertained from class records and cumulative records. This procedure was necessitated because three schools had combined classes which included both fifth and sixth grade students. A total of 174 fifth grade students was available for experimental purposes in the four schools included in the study.

Age was ascertained from class records and cumulative records. The median chronological age for the 174 students was 10 years 6 months (range = 3.5 years). In addition it was determined that eleven students had either been retained in an earlier grade or were currently repeating fifth grade. No students were eliminated at this point on the basis of age, but rather median age was recalculated each time another variable was considered. Inspection of Table 1 indicates that the median age remained the same, 10 years 6 months, but that the range was reduced to two years. This increase in homogeneity of age was achieved when students were eliminated for the following reasons; no SFTAA IQ score,

TABLE 1

Description of Sampling Procedure and Characteristics of Sample

Variables	Characteristics											
	Age[a]		IQ Score[b]			Ethnicity[c]			SES[d]			Sample Size[e]	
	Md	R	M	SD	R	SA	A	O	M	L	O	Before	After
Grade, Age	10.6	3.5										174	174
Grade, Age, IQ	10.6	2.9	94.4	12.8	52							174	159
Grade, Age, IQ, Ethnicity	10.6	2.9	94.5	12.4	52	87	70	2[f]				159	157
Grade, Age, IQ, Ethnicity, SES	10.6	2.9	94.7	13.1	52	87	70	0	36	107	14[g]	157	143
SFTAA Total IQ Score Sample Size	10.6	2.0	99.1	11.4	47	30	60	0	30	60	0	143	90

[a]Age at time of SFTAA testing in October, 1971.

[b]SFTAA Total IQ Score.

[c]SA = Spanish American; A = Anglo; O = Other.

[d]M = Middle-SES; L = Lower-SES; O = Other.

[e]Before = Sample size before variables were considered;
After = Sample size after variables were considered.

[f]American Indian.

[g]ISP score below 15 (n = 2); ISP score in range of 44-60 (n = 12).

SFTAA Total IQ score below 70, and equating of groups based on SFTAA Total IQ score.

SFTAA Total IQ scores were obtained from school records. All students, with the exception of eight (who were then eliminated from the study), completed the SFTAA in October, 1971 as part of a statewide assessment plan for the state of New Mexico. The mean SFTAA Total IQ score ($n = 166$) was 92.97 ($SD = 14.0$). Seven students were also excluded from further consideration at this point because their SFTAA Total IQ score was below 70. This decision, to drop the students from the study, was based on the New Mexico Standards for Special Education which allowed for students with IQ levels below 70, on either the WISC or Standford-Binet, to be placed in classes for educable mentally handicapped.

As indicated in Table 1, only two students were excluded from the study on the basis of ethnicity. All students coded as Spanish American on the test report forms of the SFTAA were confirmed by their classroom teacher as having the ability to converse in Spanish. This was the operational definition used to differentiate Spanish American and Anglo students. At this point in the selection procedure 70 Anglo students and 87 Spanish American students were available for further study.

Cumulative records, enrollment cards, teacher/counselor conferences and/or principal conferences were used to ascertain the occupational and educational level of each student's father or guardian. These data were then converted (Appendix A) to ISP scores

on the Hollingshead Two Factor Index of Social Position. Those students having ISP scores below 15 (n = 2) or within the range of 44-60 (n = 12) were excluded from the study. At this point, having considered both ethnicity and SES, only four middle-SES Spanish American students had been located. Due to this difficulty, the scope of the study was reduced to include only lower-SES Spanish American students and lower-SES and middle-SES Anglo students (Total n = 90).

From a total of 143 students, as indicated in Table 1, the final sample of 90 was chosen by using SFTAA Total IQ score as the variable across which all groups (n = 30 per group) were equated. The results of the elimination of students from the lower-SES Spanish American, lower-SES Anglo, and middle-SES Anglo groups, on the basis of SFTAA Total IQ scores, was summarized and presented in Table 2. A student's t-test for unrelated samples, between the two most divergent mean SFTAA Total IQ scores, i.e. middle-SES Anglo and lower-SES Spanish American, proved insignificant ($t = .4$ $df = 58$, $p > .05$).

The 90 students included in the study were rank ordered within their respective groups, i.e. lower-SES Spanish American, lower-SES Anglo, and middle-SES Anglo. From these rank orderings students were assigned, within each group, to the three experimental treatment conditions. All assignments were made on the basis of SFTAA Total IQ score in an attempt to equate all nine groups on this variable. The results of the assignment, and the subsequent two-way and one-way univariate analysis of variance computations for SFTAA Total IQ scores were summarized and presented in Table 3. No

TABLE 2

Groups After Equating on Total SFTAA IQ Scores

Group	Total SFTAA IQ Score		
	Group Size	M	SD
Lower-SES Spanish American	30	95.7	5.3
Lower-SES Anglo	30	100.2	12.7
Middle-SES Anglo	30	101.3	12.7

TABLE 3

Groups After Assignment to Treatment Procedures on the Basis of Total SFTAA IQ Scores

Group	Treatment					
	Standard		Verbal Feedback		Monetary Feedback	
	M	SD	M	SD	M	SD
Lower-SES Spanish American	95.6	9.2	95.6	6.3	95.8	5.9
Lower-SES Anglo	100.2	14.4	100.2	13.2	100.2	12.5
Middle-SES Anglo	101.2	12.1	101.4	14.4	101.3	13.4

significant differences between groups were found. The large within group variance likely contributed to this finding. No t-test was performed between the two most divergent means because their values were similar to those shown in Table 2 and significance would not expect to be reached under these conditions.

Instrumentation

The three instruments used in the present study were the Wechsler Intelligence Scale for Children (WISC), the Short Form Test of Academic Aptitude (SFTAA), and the Hollingshead Two Factor Index of Social Position (ISP).

Wechsler Intelligence Scale for Children (WISC) The WISC is comprised of two scales, Performance and Verbal. This structure allows for computation of a Verbal IQ, Performance IQ, and Full Scale IQ. The IQ scores are expressed as deviation scores with a mean of 100 and a standard deviation of 15. The Verbal scale consists of six subtests: Information, Comprehension, Arithmetic, Similarities, Vocabulary, and Digit Span. The Performance scale also consists of six subtests; Picture Completion, Picture Arrangement, Block Design, Object Assembly, Coding, and Mazes. The Mazes and Coding subtests were not utilized in the present study. Scoring criteria for all WISC's administered were Wechsler's manual (1949) and a supplemental guide prepared by Massey (1969).

Short Form Test of Academic Aptitude (SFTAA) The SFTAA was published in 1970 as the successor to the 1963 California Short-Form Test of Mental Maturity. The SFTAA includes the following four subtests:

(a) Vocabulary, purported to measure verbal comprehension and knowledge of word meanings, (b) Analogies, purported to measure the ability to recognize relationships which may be literal or symbolic, (c) Sequences, purported to measure the comprehension of the rule which applies to a series of numbers or letters, and (d) Memory, purported to measure the ability to recognize and recall facts and inferences after hearing a short story.

The SFTAA is designed for group administration and machine scoring. Administration time is approximately 30 minutes. The SFTAA yields a Language IQ, Non-Language IQ, and Total IQ expressed as deviation scores with a mean of 100 and a standard deviation of 16. The standardization sample consists of 197,912 students stratified on the variables of age, grade placement, geographic region, school district enrollment, and community type.

Hollingshead Two Factor Index of Social Position (ISP) The ISP was developed by Hollingshead (1957) to meet the need for an objective and readily usable procedure to estimate socio-economic status and class position. It was premised upon three assumptions: (a) the existence of a status structure in a society, (b) positions in the existing status structure are determined mainly by a few commonly accepted symbolic characteristics, and (c) the characteristics symbolic of status may be scaled and combined by the use of statistical procedures so a researcher can quickly stratify the population under study (Jones, 1968).

To determine social class position (an estimate of socio-economic

status) for any school child, by using the ISP, two factors are essential: (a) the occupational role of the father or guardian, and (b) the amount of education which he has completed. Each of these factors is then scaled according to a predetermined system of scores (Appendix A). The factors, i.e. occupation and education, are combined by weighting the individual scores obtained from the scale positions. The weights for each factor were determined by multiple correlation techniques (Hollingshead, 1957). The range of the combined ISP scores is from a low of eleven to a high of seventy-seven. The low scores represent a high level of education and an occupation requiring complex technical or managerial responsibilities. The high scores represent a low level of formal education and an unskilled, manual labor occupation. All unemployed persons and persons on public or private relief receive a rating in the same position as unskilled workers.

When dealing with a total community or population, for which the primary purpose is to delineate social class or structure, Hollingshead (1957) has suggested that scores obtained on the ISP can be meaningfully assigned to one of five social classes. However, when the prime purpose of a study is to assess the effects of experimental procedures for individuals within a homogeneous social class unit, precedence has been established for the combining of score intervals into less than five social classes (Jones, 1968; Healey, 1969; Higgins & Archer, 1968; Janke & Havinghurst, 1945). For the purposes of the present study, lower-SES was defined for

those individuals having social position scores which fell into the range of 61-77. Middle-SES was defined for those individuals having social position scores which fell into the range of 15-43. This modification of the classification of ISP scores took into account the elimination, from the present study, of those individual of higher socio-economic status, i.e. social position scores below 15. An attempt was also made to differentiate lower- and middle-SES by excluding scores within the range of 44-60.

Procedure

All data needed for selection of the sample were collected between March 15, 1972 and April 7, 1972. All criterion measures, i.e. WISC administrations, were completed during April-May, 1972.

Each of the four schools participating in the study provided a testing area which was free from outside disturbance. Three of the four schools provided an alternate testing area so that other activities which may have warranted the use of the prime testing area did not interrupt the testing sessions. The testing areas were comparable for all four schools, with each having adequate lighting, ventilation, and isolation from hall, classroom, or playground noise. In no instance was the testing area located in the principal's office or other administrative area.

All students were taken from their regular classroom to the testing area by the examiner. In all cases the classroom teachers had been previously informed of the intentions of the study (during conferences necessary to establish ethnicity and/or socio-

economic status) and had explained the study to the students. The teacher explanation was in terms of informing the students they would take a test which would be "fun and different" from their regular tests. It was also stressed that each student would really help the examiner with "a big project" which was needed so he could complete his studies at the university. No details as to the type of test or the varying testing procedures was given to the students prior to the test sessions. With this introduction having previously been given, the walk to the testing area was used as an opportunity to begin to establish rapport.

The author of the study was the only examiner involved in the administration procedures of the WISC. The examiner worked from a list of student names and their corresponding administration procedure designation. No WISC record forms were scored until all testing in all schools was completed.

In each of the four schools the testing sequence progressed from the standard administration procedure to the verbal feedback for correct answer administration procedure and finally to the monetary feedback for correct answers administration procedure. This progression was predicated on the assumption that there might be various levels and degrees of incentive and/or anticipatory reaction operating within the group of children as a result of the various administration procedures which would be communicated between peers. In other words, the possibility existed that when the first student was "paid" for his correct responses, he would

communicate this to his peers and each succeeding examinee may have anticipated being "paid" also. If the administration procedures had been randomly utilized this could have led to differential effects when a student expecting money received either verbal feedback or no feedback. In an attempt to avoid these differential effects the progression outlined above was followed in each school.

The standard administration procedure included the recording of the following background information: name, age, birthdate, and school. The WISC was then administered according to the procedures outlined by Wechsler (1949).

The verbal feedback for correct answers administration procedure included the recording of the following background information: name, age, birthdate, and school. Prior to the beginning of testing the following instructions were read by the examiner to the examinee:

> "I am going to ask you a number of questions and have you do some problems with pictures and puzzles. I want to see how well you can answer the questions and do the problems and puzzles. Sometimes children are interested in knowing how well they are doing. Because of this, I am going to tell you whenever you give a correct answer or solve a problem correctly. Of course, it is expected that there will be some questions for which you will be unable to give a correct answer. Try to do your best. Do you have any questions?"

All correct answers were followed by the verbalization of "correct" or "right" by the examiner to the examinee. For those Performance subtest items for which it was possible to receive a range of scores, all responses except those scored as zero were followed with feedback.

The monetary feedback for correct answers administration procedure included the recording of the following background information:

name, age, birthdate, and school. Prior to the beginning of testing the following instructions were read by the examiner to the examinee:

> "I am going to ask you a number of questions and have you do some problems with pictures and puzzles. I want to see how well you can answer the questions and do the problems and puzzles. Sometimes children are interested in knowing how well they are doing. Because of this, I am going to give you a penny whenever you give a correct answer or solve a problem correctly. I will put your pennies here in this little box and when we're all through you can count them and take them with you. Of course, it is expected that there will be some questions for which you will be unable to give a correct answer. Try to do your best. Do you have any questions?"

All correct answers were followed by the placement of a penny in the box (through a slit in the cover) by the examiner. The box was placed to the examiner's left and midway between the examiner and examinee. The examiner held the pennies in his left hand throughout the session. For those Performance subtest items for which it was possible to receive a range of scores, all responses except those scored as zero were followed with feedback.

Treatment of Data

All hypotheses for the study were tested originally through analysis of variance (ANOVA) computations. Two-way, univariate computations were used to analyze the WISC results for Anglos. Three separate ANOVAs were computed using the following dependent variables: WISC Full Scale IQ scores, WISC Verbal IQ scores, and WISC Performance IQ scores. One-way, univariate computations were used to analyze the WISC results for Spanish Americans. Three separate ANOVAs were computed using the following dependent variables: WISC Full Scale IQ scores, WISC Verbal IQ scores, and WISC Performance IQ scores. Prior to each ANOVA

computation, homogeneity of variance was checked using Hartley's F_{max} test (Winer, 1962). All significant effects were further analyzed through the use of Newman-Keuls after F test (Winer, 1962).

Chapter 3

RESULTS

The sections below present the results of the analyses of WISC IQ scores for: (a) lower-SES Spanish American students as a separate group, (b) lower- and middle-SES Anglo students together, and (c) lower-SES Spanish American students and lower- and middle-SES Anglo students together.

Lower-SES Spanish Americans

Mean Verbal, Performance, and Full Scale WISC IQ scores, for the lower-SES Spanish American students, are presented in Table 4 for the three treatment procedures, i.e. standard, verbal feedback, and monetary feedback. An F_{max} test indicated no significant departure from homogeneity. Visual inspection of those data presented in Table 4 indicates the following: (a) numerical values for WISC Verbal IQ scores and Full Scale IQ scores increased under each of the two experimental treatment procedures over the standard procedure, and (b) numerical values for WISC IQ scores were the highest under monetary feedback.

The WISC IQ scores of the lower-SES Spanish American students were subjected to three separate one-factor analyses of variance procedures. The results are summarized in Table 5, Table 6, and Table 7. No significant differences were found and lead to the acceptance of the null hypotheses concerning no difference for Spanish American students under the different treatment procedures.

TABLE 4

WISC Means and Standard Deviations
for Lower-SES Spanish Americans

Treatment	Verbal IQ		Performance IQ		Full Scale IQ	
	M	SD	M	SD	M	SD
Standard	89.3	11.6	101.0	18.5	94.4	15.4
Verbal Feedback	92.2	9.6	99.9	17.1	95.7	12.3
Monetary Feedback	98.7	11.8	104.5	18.2	101.7	15.2

TABLE 5

Analysis of Variance Summary Table
for WISC Verbal IQ Scores for
Lower-SES Spanish Americans

Source of Variance	SS	DF	MS	F
Treatment	463.40	2	231.70	1.89
Error	3365.80	27	122.43	

TABLE 6

Analysis of Variance Summary Table
for WISC Performance IQ Scores for
Lower-SES Spanish Americans

Source of Variance	SS	DF	MS	F
Treatment	115.40	2	57.70	.17
Error	8685.40	27	321.68	

TABLE 7

Analysis of Variance Summary Table
for WISC Full Scale IQ Scores for
Lower-SES Spanish Americans

Source of Variance	SS	DF	MS	F
Treatment	303.27	2	151.63	.73
Error	5588.60	27	206.96	

Lower- and Middle-SES Anglos

Means and standard deviations, for lower- and middle-SES Anglo students, for WISC Verbal, Performance, and Full Scale IQ scores are presented in Table 8. An F_{max} test indicated no significant departure from homogeneity. Inspection of those data presented in Table 8 indicates the following: (a) numerical values for WISC IQ scores, for lower-SES Anglo students, increased under both verbal and monetary feedback, and (b) middle-SES Anglo students performed in a very consistent manner across all treatment procedures.

The WISC IQ scores of the lower- and middle-SES Anglo students were subjected to three separate two-factor analyses of variance procedures. These results are summarized and presented in Table 9, Table 10, and Table 11. One significant main effect difference for SES was obtained when WISC Full Scale IQ scores were analyzed. Subsequent Newman-Kuels and Dunnett's analyses of the Full Scale IQ scores revealed no significant differences in cell means. The most reliable conclusion which could be drawn was that the mean Full Scale IQ score for lower-SES Anglo students was significantly different from the mean Full Scale IQ score for middle-SES Anglo students. Further inspection of the analysis of variance F values indicates that any trends toward significance were generally due to SES and not treatment procedures or an interaction between the two factors.

Supplemental Analysis

In an attempt to account for more of the total variance within

TABLE 8

WISC Means and Standard Deviations for Anglos

Treatment	Verbal IQ		Performance IQ		Full Scale IQ	
	M	SD	M	SD	M	SD
Lower-SES Anglos						
Standard	96.3	14.5	95.5	11.5	95.5	11.9
Verbal Feedback	97.8	13.9	101.0	18.9	99.5	16.1
Monetary Feedback	100.6	11.3	100.1	9.3	100.4	9.4
Middle-SES Anglos						
Standard	104.1	9.7	105.5	11.5	105.3	10.7
Verbal Feedback	103.8	11.0	104.0	18.4	104.2	13.9
Monetary Feedback	103.9	12.8	107.0	13.8	106.0	12.8

TABLE 9

Analysis of Variance Summary Table
for WISC Verbal IQ Scores for
Lower- and Middle-SES Anglos

Source of Variance	SS	DF	MS	F
SES	487.35	1	487.35	3.21
Treatment	44.44	2	22.22	.14
SES X Treatment	51.36	2	25.65	.16
Error	8175.50	54	151.39	

TABLE 10

Analysis of Variance Summary Table
for WISC Performance IQ Scores for
Lower- and Middle-SES Anglos

Source of Variance	SS	DF	MS	F
SES	660.03	1	660.03	3.20
Treatment	96.50	2	48.25	.23
SES X Treatment	122.57	2	61.28	.29
Error	11125.90	54	206.03	

TABLE 11

Analysis of Variance Summary Table for WISC Full Scale IQ Scores for Lower- and Middle-SES Anglos

Source of Variance	SS	DF	MS	F
SES	673.35	1	673.35	4.20*
Treatment	78.44	2	39.22	.24
SES X Treatment	74.10	2	37.05	.23
Error	8647.10	54	160.13	

*$p < .05$.

the total array of WISC scores across all treatment procedures, the data for all groups were subjected to an additional analysis of variance procedure. For this analysis the two factors were treatment procedure and group (lower-SES Spanish American students, lower-SES Anglo students, and middle-SES Anglo students). Three separate analyses of variance computations were performed. The results are summarized and presented in Table 12, Table 13, and Table 14. One significant difference, a main effect difference for group, was obtained when WISC Verbal IQ scores were analyzed. A subsequent Newman-Kuels analysis of the Verbal IQ scores revealed no significant differences in cell means. The most reliable conclusion which could be drawn was that the mean Verbal IQ score for lower-SES Spanish American students was significantly different from the mean Verbal IA score for middle-SES Anglo students. The most likely explanation for obtaining a significant difference for these mean Verbal IQ scores was the generally lower within group variance for all groups (refer to standard deviations presented in Table 4 and Table 8).

Also to be noted is the trend toward significance for the group main effect for Full Scale IQ scores. This trend was in line with the results obtained from the separate analysis of Spanish American and Anglo groups. Inspection of the data summarized in Table 12, Table 13, and Table 14 indicates that any trends toward significance were generally due to group effects rather than treatment procedure or an

TABLE 12

Analysis of Variance Summary Table for WISC Verbal IQ Scores for Lower-SES Spanish Americans, Lower-SES Anglos, and Middle-SES Anglos

Source of Variance	SS	DF	MS	F
Treatment	319.36	2	159.68	1.12
Group	1668.02	2	834.01	5.88*
Treatment X Group	239.78	4	59.94	.42
Error	11480.30	81	141.73	

*$p < .05$.

TABLE 13

Analysis of Variance Summary Table for WISC Performance IQ Scores for Lower-SES Spanish Americans, Lower-SES Anglos, and Middle-SES Anglos

Source of Variance	SS	DF	MS	F
Treatment	161.63	2	80.81	.33
Group	662.96	2	331.48	1.35
Treatment X Group	172.84	4	43.21	.17
Error	19811.30	81	244.58	

TABLE 14

Analysis of Variance Summary Table for WISC Full Scale IQ Scores for Lower-SES Spanish Americans, Lower-SES Anglos, and Middle-SES Anglos

Source of Variance	SS	DF	MS	F
Treatment	288.60	2	144.30	.82
Group	1087.40	2	543.70	3.09
Treatment X Group	167.20	4	41.80	.23
Error	14235.70	81	175.70	

interaction between the two factors.

Kendall's coefficient of concordance (w) computations were completed for the mean WISC scaled scores for each of the three treatment groups. The results are summarized and presented in Table 15. Significant correlations were obtained for the rank ordered mean WISC scaled scores for lower- and middle-SES Anglo students. These results may be interpreted as meaning that similar factors or conditions enter into the rank orders obtained for the two groups. Inspection of Table 15 indicates that the nonsignificant correlation obtained for the rank ordered mean WISC scaled scores for lower-SES Spanish American students was most likely due to factors within the treatment procedures which differentially affected student response patterns. The most observable differences occurred in the scaled scores for the Object Assembly subtest under the standard administration procedure, the Similarities and Picture Completion subtests under the verbal feedback treatment, and the Digit Span subtest under the monetary feedback treatment. In spite of this variability, the overall trend was for the lower-SES Spanish American students to score consistently higher on Performance subtests under all treatment procedures.

The final trend noted through inspection of Table 15 was the almost constant rank order positions for the mean scores obtained on the Comprehension and Picture Arrangement subtests. This finding is of importance because both subtests require social judgement; but responses to the Comprehension subtest items must be expressed verbally while the responses to the Picture Arrangement subtest items are expressed manually with no covert verbal activity necessary.

TABLE 15

Summary Table for Rank Order Positions for Mean WISC Scaled Scores for Lower-SES Spanish Americans, Lower-SES Anglos, and Middle-SES Anglos

Treatment	Scaled Scores									
	I	C	A	S	V	DS	PC	PA	BD	OA
Lower-SES Spanish Americans										
Standard	5	10	7	6	9	8	4	1	3	2
Verbal Feedback	5	10	8	3	6	9	1	2	4	7
Monetary Feedback	5	10	5	8	9	1	5	3	2	7
Lower-SES Anglos										
Standard	4.5	10	9	1	3	4.5	7	2	8	6
Verbal Feedback	3.5	10	2	3.5	8.5	5	6	1	7	8.5
Monetary Feedback	5	9	7	2	4	3	6	1	10	8
$W = .75; \chi^2 = 20.25; df = 9; p < .05$										
Middle-SES Anglos										
Standard	4	5	10	2	3	8	6	1	7	9
Verbal Feedback	4.5	8.5	8.5	2	3	7	6	1	4.5	10
Monetary Feedback	7	9.5	8	2.5	2.5	4	6	1	9.5	5
$W = .77; \chi^2 = 20.79; df = 9; p < .05$										

Chapter 4

DISCUSSION

Two statistically significant results were obtained in the present study. First, a main effect difference for SES was obtained when WISC Full Scale IQ scores were analyzed for lower- and middle-SES Anglo students. Second, a main effect difference for group (lower-SES Spanish American students, and lower- and middle-SES Anglo students were included in this analysis) was obtained when WISC Verbal IQ scores were analyzed. When these two results are considered in light of all the data analysis which was conducted, it can be seen that the present study is characterized by a lack of overall significant findings. In an effort to explain these results several variables; control, independent, and dependent, are discussed below.

Control Variables

Place of residence - urban/rural - was accounted for in the present study by selecting all students from rural schools. However, two schools were located in a district which had a large city within its boundary. Previous research with the WISC demonstrates that rural students tend to score lower than urban students (Seashore, Wesman, & Doppelt, 1950; Seashore, 1951; Fast, 1967; Hemberger, 1970). Rural students also tend to show more homogeneity in test results. Approximately 25% of the students in the present study were from the two schools in the city district. The results of the inclusion of these students should

be minimal, but the possibility that variability was introduced which could have contributed to the spread of scores obtained on the WISC cannot be discounted.

One trend noted for the overall study bears mentioning here in the discussion on place of residence. The trend noted was that the students scored lowest on the Comprehension subtest and highest on the Picture Arrangement subtest of the WISC. If one equates living in a rural area with the opportunity to engage in more manual activity, especially if the father's occupation is farm owner or farm laborer, then the tendency for rural children to successfully express themselves on a test requiring the non-verbal sequencing of social situations is more understandable. An explanation for the low level of scoring on the Comprehension subtest is not readily apparent, but it should be noted that Fast (1967) found the same results for lower-SES Anglos who were administered the WISC under the same treatment procedures as utilized in the present study.

Age and grade level were kept as homogeneous as possible within the present study by restricting the choice of students to those enrolled in fifth grade classes. This choice may have had significant effects on the performance of the lower-SES Spanish American students. Previous reports of studies with Spanish American students have indicated that increased exposure to the English language in school has a positive effect on the results of tests of intelligence (Estes, 1953; Estes, 1955; Fitch, 1966; Vasa, 1971). This general tendency may have been operating within the current study and contributed to diminishing differences between Spanish American and Anglo students.

All groups within the current study were equated on the basis of SFTAA IQ Total scores. All differences between groups were insignificant (refer to Table 2 and Table 3). In spite of these efforts to equate groups the results obtained from the standard administration of the WISC tended to indicate that middle-SES students score higher than lower-SES students. Also, Performance IQ scores 5-10 IQ points higher than Verbal IQ scores were obtained for lower-SES Spanish American students under the standard administration procedure.

There appear to be several possible explanations for the results obtained under the WISC standard administration procedure. First, more stability could possibly have been obtained by using both the Language and Non-Language IQ scores from the SFTAA as the basis for equating groups. This possibility was considered at the time of sampling, but was not followed because it would have required a much larger group from which to choose the experimental sample. This was not possible because of a lack of funds to complete the larger sampling procedure. Second, the possibility exists that the WISC and the SFTAA measure different traits or combinations of traits, thus negating the use of either instrument as a basis for equating groups prior to using the second instrument. No published studies were located that indicated the relationship between WISC and SFTAA test results. Finally, the possibility exists that through the use of the SFTAA other sources of variability were introduced into the lower-SES Spanish American groups. More specifically, in selecting the Spanish American groups the students with the highest SFTAA Total IQ scores were utilized. This was necessary to bring their

IQ level up to that of the Anglo groups. Other investigators have speculated that when students are selected in this manner bias may be introduced (Douvan, 1956; Fast, 1967). This bias would be of the type which would allow lower-SES Spanish American students to score closer to the level normally attained by Anglo groups. In other words, lower-SES Spanish American students with high SFTAA Total IQ scores may have reacted in the WISC testing situation in a manner more characteristic of Anglo students. This situation would probably not have resulted if Spanish American students with lower SFTAA Total IQ scores had been selected. This possibility remains as a question and cannot be answered as a result of the current study.

Ethnicity was defined in a general, nonrigorous manner in the present study. The definitions and procedures utilized were followed for the purposes of eliminating students who were American Indians and students with Spanish surnames who could not converse in Spanish. Summaries of research indicate that Spanish Americans are a diverse ethnic subgroup (Arsenian, 1945; Jensen, 1962a; Jensen, 1962b; Darcey, 1963). However, these summaries also indicate that experiments which attempt to control for age, socio-economic status, and type of test will tend to account for much of the variability which is present in the Spanish American ethnic group. Consideration has been made in the present study for each of these variables, and thus it would appear that ethnicity was well enough defined.

Douvan (1956) studied lower- and middle-SES students and achievement imagery. She speculated that students living in lower-class sur-

roundings, but who aspired to middle-class surroundings may exhibit more achievement motivation and perform differently in learning and testing situations. To a limited extent this speculation may have relevance to the present study, because some of the fathers of the students were employed in urban areas or government installations while maintaining their residence in a rural area. If one can assume that children from a relatively isolated, rural area whose fathers work in an urban area, perceive the urban area differently than do children whose fathers work in a rural area, then some variability may have been introduced into the present study through the definition of father's occupation as a requirement for establishment of SES. No sources were located during the review of literature which would shed light on the use of the Hollingshead Two Factor Index of Social Position for settings such as those just described. Also, the failure to obtain a sample of middle-SES Spanish American students leaves open the question as to whether any speculated difference in achievement motivation would be more closely aligned to SES or ethnic background.

Independent Variables

Two feedback treatment procedures were utilized in the present study, i.e. verbal feedback for correct answers on the WISC and monetary feedback for correct answers on the WISC. It was considered a point of theoretical and empirical importance to call and view these treatment procedures as feedback in nature rather than incentive or reinforcement conditions. Reynolds (1968) has defined a reinforcer as an event which increases the probability that a given response will reoccur in the

future. Clearly, in the present case, one could not tell whether telling a student he had the correct answer or giving a penny for a correct answer would produce the effects necessary to call either a reinforcer. Two previous studies (Fast, 1967; Sweet, 1969) had produced conflicting results. Sweet found the verbal and monetary treatments reinforcing, but Fast did not.

Justification for calling the treatment procedures utilized in the current study feedback conditions, comes primarily from work reported by Solomon & Rosenberg (1964). They define feedback as a mechanism by which an individual receives information about the nature and/or effects of its behavior. The feedback may then be utilized to determine whether a course of action is the correct one, or whether some alteration is necessary. Locke, Cartledge, & Koppel (1968) indicate that knowledge of results (used similarly to feedback) may contain both an informational component and a motivational component. They speculate and give some evidence that knowledge of results procedures, which lead to setting specific goals which are difficult to attain, increase performance. There is also some evidence that situations which provide only acknowledgement for correct answers do not increase performance as much as situations in which incorrect answers are acknowledged or in which both correct and incorrect answers are acknowledged (Spence & Segner, 1967; Spence & Dunton, 1967).

In light of the above discussion concerning feedback conditions, it can be seen that the two treatment procedures fit the technical description of providing information to the student concerning his per-

formance on the WISC. One can only speculate as to how efficiently and for what purposes the students were able to use this information. For middle-SES Anglo students there was little variation in performance. The most likely explanation of these findings is that the motivation, or at least the conditions, which exist in the standard WISC administration procedures are sufficient to elicit an asymtopic performance from this group. For lower-SES Anglo students there was a trend, which was not statistically reliable, for a higher level of performance under the feedback conditions. This same trend was noted for the lower-SES Spanish American students. The most likely explanation of these findings is that feedback given in the form of verbal statements or money has a motivational effect. Some degree of novelty within the situation may also account for this increased level of performance.

Dependent Variables

The use of the WISC as the basis for the present study is justified because of its wide use with children from many different racial and ethnic groups. Even though the present study is characterized by a lack of overall significant findings, several considerations must be stated concerning the use of the WISC.

The WISC is a complex instrument which was devised to measure what the author conceptualized as a complex series of traits (Wechsler, 1943; 1950; 1958). Perhaps it is too diverse and too complex to be susceptible to changes in administration procedures. Sattler & Theye (1967) generally concluded this about individual tests, unless they were used with special groups. The implications of the present study are that fifth grade lower-

SES Spanish American students and lower-SES Anglo students are probably enough like other students; i.e. children on whom the WISC was standardized, so as not to be effected by or require special administration procedures for the WISC.

In spite of all the heterogeneity present in the WISC as a criterion measure, analysis of the subtest scaled scores for lower- and middle-SES Anglo students showed a consistent rank order. A statistically reliable variation in rank orders was noted for the lower-SES Spanish American students (refer to Table 15). No specific conclusions can be drawn from the results of the Spanish American groups except to suggest that as a group the treatment procedures, or some other uncontrolled variables, had more of an effect here than in the Anglo groups.

There are at least two other reasons as to why performance on the WISC, as a complete instrument and as measured by the Verbal, Performance, and Full Scale IQ scores, was not particularly susceptible to the treatment procedures used in the present study. First, most studies using feedback and/or reinforcement procedures employ a task which can be carried to an errorless level (Sweet, 1969). The WISC was developed and is structured with diversity in mind. In other words, no one is supposed to get all the answers correct. In a case such as this feedback and reinforcement cannot be carried out on a continuous schedule. Second, in most studies using reinforcement and/or feedback, the reinforcers or feedback are given for rather equally defined amounts of behavior. This is possible on the WISC only within any one particular subtest. This is perhaps one of the contributing factors to the positive results

obtained by Sweet (1969) when he used the WISC and treatment procedures the same as in the present study. For his study he used only the Verbal scale of the WISC. It can be speculated that if he had included the Performance scale, on which lower-SES students normally perform better, the chances of obtaining significant treatment effects would have been decreased.

Implications for Further Research

The most apparent need for further research concerns the further study of the same treatment procedures, but using a design which includes middle-SES Spanish American students. If this group were included comparisons could be made between the variables of ethnicity and socioeconomic status. This subsequent research might help decide whether the variables of bilingualism and/or biculturalism must be further defined when conducting this type of research with Spanish American groups of the age level used in the present study.

A study at both a lower and higher grade level which would include lower- and middle-SES students from Anglo and Spanish American groups would have merit. This study could also employ a test-retest design. The test-retest design would eliminate the need to equate groups based on another intelligence test. As the study by Fast (1967) points out, a test-retest design should be considered only if the retest can occur six months or more after the initial testing. This would help to reduce the practice effect which may have been operating in his study.

An area of related interest which surfaced as a result of the present study is the lack of research on the effect of social reinforcers

and/or feedback conditions for Spanish American students. The few studies which were reviewed in this area generally tended to rely on any studies done with groups other than Anglo groups, for guidance in structuring research with Spanish Americans. A systematic series of studies which would utilize various tangible and verbal feedback conditions for various age levels of Spanish Americans is needed.

Conclusions

Any conclusions drawn from the present study must consider that the experimental conditions may have effected the total scale scores or subtest scores on the WISC for any individual or group of individuals in one or more of the following ways: (a) served as an incentive, thus increasing the scores, (b) served in a debilitating manner, thus depressing the scores, (c) acted in a differential manner, thus increasing some scores and decreasing others, and/or (d) had no effect.

Strictly speaking, from the view of null hypotheses set forth and the subsequent statistical analysis, it appears that monetary feedback and verbal feedback for correct answers had no effect on WISC scores for rural fifth grade lower-SES Spanish American, lower-SES Anglo, and middle-SES Anglo students. Group membership, as defined by SES or ethnicity, appeared to produce the only significant results which were detected. Results indicating no differences due to feedback conditions also point toward no general incentive effects and no general debilitating effects. Inspection of the data indicates this rather consistent performance holds for both lower- and middle-SES Anglos.

The conclusions offered above have implications for the speculation

that more meaningful administration procedures could be derived for the WISC. It would appear that the feedback procedures utilized in this study did not help reduce any constant error which may be present in WISC scores for lower- and middle-SES Anglo students. In other words, this study indicates that the level of performance for fifth grade Anglo students on the WISC is rather insensitive to change when additional information and potential incentive is offered during test administration.

The one group which may have been effected differentially by the feedback conditions was the lower-SES Spanish American students. Rank order analysis of subtest scores for this group did not yield a significant correlation. At best then, feedback seems to effect those factors attributable to variable error; i.e. error which manifests itself in variations between people and from one test performance to another by the same person. These results indicate that more research may be needed to discover the variables which now appear as sources of variable error in the performance of Spanish American students on the WISC. The results of the present study do not provide strong enough evidence to warrant the recommendation that test procedures for the WISC should be altered for rural, fifth grade lower-SES Spanish American students.

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APPENDIX A

RELATED RESEARCH: DERIVING ISP SCORES

To determine ISP scores for an individual two items are essential: (a) the occupational role of the head of the household; and (b) the amount of formal schooling he has received. Each of these items is then scaled according to the following system of scores. Representative occupational roles, as delineated in Hollingshead (1957), are listed below.

The Occupational Scale

1. Higher executives - bank president, commissioned officer.
   Large proprietors - contractor, dairy owner, lumber dealer.
   Major professionals - chemist, forester, teacher (college).

2. Business managers - farm manager, postmaster, office manager.
   Proprieters of medium businesses - clothing store owner, real estate broker, store owner, theater owner.
   Lesser professionals - librarian, teacher (elementary and high).

3. Administrative personnel - service manager, shop manager.
   Small business owners - bakery, car dealer, cattle dealer.
   Semi-professionals - laboratory assistants, surveyors.
   Farmers - farm owners ($25,000 - $35,000).

4. Clerical and sales workers - sales clerk, bank clerk, bookkeeper.
   Technicians - laboratory technician, draftsmen, timekeeper.
   Owners of little businesses - $3,000 - $6,000.
   Farmers - owners ($10,000 - $20,000).

5. Skilled manual employees - auto body repairers, lumberjack, electrician, plumber, welder, tenants who own equipment.

6. Machine operators and semi-skilled employees - cooks, delivery men, gas station assistant, truck driver, wood worker.

7. Unskilled employees - farm helper, janitor, waitress, woodchopper, public relief, unemployed, share cropper. [pp. 2-8]

The Educational Scale

1. Graduate of professional training. Persons who complete a recognized professional course leading to a graduate degree.

2. Standard college or university graduation. All individuals who complete a four-year college or university course leading to a recognized college degree.

3. Partial college training. Individuals who complete at least one year but not a full college course.

4. High school graduates.

5. Partial high school. Individuals who complete the tenth or the eleventh grades, but do not complete high school.

6. Junior high school. Individuals who complete the seventh grade through the ninth grade.

7. Less than seven years of school. [p. 9]

Integration of Two Factors

The factors of Occupation and Education are combined by weighting the individual scores obtained from the scale positions. The weights for each factor were determined by multiple correlation techniques. The weight for each factor is, Occupation (7) and Education (4).

To calculate the Index of Social Position score for an individual the scale value for Occupation is multiplied by the factor weight for Occupation, and the scale value for Education is multiplied by the factor weight for Education. For example, John Smith is the manager of a chain supermarket. He completed high school and one year of business college. His Index of Social Position score is computed as follows: [pp. 9-10]

Factor	Scale Score	Factor Weight	Score X Weight
Occupation	3	7	21
Education	3	4	12
		Index of Social Position Score	33

APPENDIX B

RELATED RESEARCH: VARIABLES RELATED TO EFFECTIVENESS OF VERBAL AND TANGIBLE FEEDBACK

The treatment procedures in the present study consisted of providing either verbal or tangible feedback for correct answers during the WISC testing sessions. Studies are reviewed below which illustrate the variables related to the effectiveness of verbal and tangible feedback.

Terrell & Kennedy (1957) and Terrell (1958), using groups of 4, 5, and 9 year-olds, a button-pushing discrimination task, and both verbal and tangible feedback, reported that tangible feedback in all cases increased performance above other conditions. Spence & Segner (1967) and Spence & Dunton (1967), also used a discrimination task, but employed three reinforcement combinations, i.e. reward-blank, punishment blank, and reward-punishment. In all cases in which the reward-blank condition consisted of a tangible reward, i.e. candy, performance was lowest for all groups. Groups examined included lower-SES and middle-SES whites, Negroes, and Spanish Americans. The apparent lack of response to a tangible feedback condition was explained by Spence & Dunton (1967) as resulting from a lack of information regarding the blank experimental condition and distraction caused by the tangible feedback condition.

In an attempt to look at socio-economic status and it's relationship to tangible and verbal feedback conditions, Douvan (1956) used groups of twelfth grade, lower-SES and middle-SES students and an anagram learning task. The major finding was that lower-SES students produced significantly less achievement imagery, when receiving knowledge of results, than did middle-SES children. In a similar manner Terrell, Durkin, & Wielsley (1959) and Zigler & DeLabry (1962) showed

evidence that lower-SES first and fifth grade students and mental retardates performed significantly better, i.e. had a greater increase in performance, under tangible feedback conditions than did their middle-SES counterparts. Hannaford (1970), working with educably mentally retarded students, could not find support for the results of Zigler & DeLabry (1962), but indicated instead that no significant difference was found for retardates on a cognitive or motor task under knowledge of results or tangible feedback conditions. Shores (1968) considered the effects of tangible and confirmation of results feedback conditions for groups of lower- and middle-SES normal and learning disabled groups of fourth grade children. For a forced choice size discrimination task the following main results were obtained: (a) middle-SES normals performed better under knowledge of results conditions, (b) middle-SES learning disabilities performed better under tangible feedback conditions, (c) lower-SES learning disabilities performed better under knowledge of results conditions than did lower-SES normals, and (d) lower-SES normals performed better under tangible feedback conditions than did lower-SES learning disabilities. Somewhat analogous interactional results were obtained by Lackner (1970) for lower- and middle-SES second and third grade students. Using spelling scores as criterion measures he indicated that lower-SES second grade children performed best under knowledge of results conditions, third grade lower-SES children performed best under tangible feedback conditions, and the performance of middle-SES children was highest under tangible feedback conditions. Hamner (1969), working with Negro beginning readers, found

both tangible and intangible feedback conditions could be used successfully in individualized instruction of basic reading skills, but tangible feedback conditions produced more correct answers.

The studies reviewed above indicate that the effects achieved as the result of utilizing verbal and tangible feedback are at least the result of the following variables and their interrelationships: age, intellectual ability, race, SES, criterion task, and method of feedback. Method or type of feedback, especially verbal feedback, has been widely employed in learning experiments. Relevant research in this area and its relationship to race, SES, intellectual ability, and criterion task is reviewed below.

The basic design employed for testing the effects of verbal feedback (i.e. reinforcers) consists of three conditions: (a) praise or approval, (b) blame or disapproval, and (c) control. A second design frequently used also consists of three conditions: (a) feedback for correct response, (b) praise for correct response, and (c) control. Some studies were also reviewed which used either a part of either basic design or a combination of portions of each.

Kennedy & Vega (1965) employed the praise- blame-control design to investigate the effects of race of examiner on the performance of Negro and white children on a discrimination task. The only significant difference was that Negro children (grade levels 2, 6, and 10) showed an increase in performance under the blame condition when it was administered by a Negro examiner, but showed a decrease under a white examiner. Allan, Dubanoski, & Stevenson (1966) used the praise-

blame-control paradigm with Negro and white children. The main significant result was a same race effect for performance on a marble dropping task. Allan (1966) reported on the use of the design for kindergarten and fifth grade boys. The results indicated that younger children remain longer at both simple and complex tasks when praised and older children remain longer when an adult was critical rather than supportive or silent. Two studies, Rosenhan (1966) and Katz, Henchey, & Allen (1968), used only praise and disapproval and did not provide a control. Rosenhan (1966) utilizing a switch-pressing task, reported that lower-SES children did better when they received praise. No difference was obtained between lower-SES Negroes and lower-SES whites, indicating that social class was contributing more to performance than racial differences. Katz, Henchey, & Allen (1968) restricted their experimental group to Negro boys and found that they performed better on a paired-associate learning task when examined by a Negro examiner and given approval for their performance.

When the correctness- praise-control paradigm is utilized the important consideration is that correctness is administered as feedback for work completed, while praise is for personal effort expended. Rucinski (1966) used the correctness- praise-control design with fifth grade lower- and middle-SES students who were required to perform a number cancellation task. The main significant result was that no difference was achieved between lower-SES students when they were given praise and correctness feedback. The results for middle-SES students showed an interactional effect based on sex and procedure. Zigler &

Kanzer (1962) gave praise to some subjects and correctness information to others for performance on a marble dropping task. The results indicated that lower-SES students performed better with praise and middle-SES students performed better when given information concerning the correctness of their efforts. McGrade (1965), using a design similar to that of Zigler & Kanzer (1962), could not substantiate the social class by reinforcer type interaction, but could show evidence for age by class interaction. Rosenhan & Greenwald (1965), using the same marble dropping task, could find no difference between social class preferences with regard to type of reinforcer, but did substantiate the findings of other experiments that younger children tend to work better under praise and older children under those conditions in which they receive information for correct performance.

In summarizing the effects of verbal and/or tangible feedback, it would appear that age, sex, race, SES, intellectual ability, and criterion task are all sources of influence contributing to the effectiveness or ineffectiveness of any given feedback condition. All studies reviewed above used rather well defined tasks of either a cognitive or motor nature. Only one study, Hannaford (1970) used a criterion measure which was part of a standardized test. No explanation is readily apparent for this lack of use of standardized measuring instruments as criterion measures.

APPENDIX C

RELATED RESEARCH: INCENTIVES AND TEST SCORES

The present study investigated the effects of verbal and monetary feedback on WISC scores. Two previous studies, Fast (1967) and Sweet (1969), used similar designs and included discussion of the obtained results in terms of the incentive or motivation values of the feedback conditions. Studies are reviewed below which illustrate the relationship between incentives and test scores.

Several studies have been conducted using the Stanford-Binet as the criterion measure and using experimental administration procedures as independent variables. In an early study Klugman (1944), administered the Stanford-Binet over a one week interval, using alternate forms, to a group of students ranging in school placement from second to seventh grade. Each student was placed in a praise-praise, praise-money, money-money, or money-praise group. The major result was that no significant difference was found between the praise and money groups. Tiber & Kennedy (1964) used groups of lower-SES and middle-SES whites and lower-SES Negroes and four incentive conditions: verbal praise, verbal reproof, candy and control. The Stanford-Binet was again utilized in a test-retest design. The results indicated no difference between incentive groups and no interaction between type of incentive and SES group. The final study to be reviewed which utilized the Stanford-Binet was conducted by Zigler & Butterfield (1968) with a group of nursery school children. The children were all culturally deprived and were administered the Stanford-Binet on four occasions, i.e. twice at the beginning of the nursery school year and twice at the completion of the year. Each student received the test twice in the standardized manner and twice under optimized conditions which consisted of reordering test items

and giving encouragement when items were missed. The main finding was a large difference between standardized and optimized testing conditions.

Four current studies using standardized group tests and various types of incentives were also ascertained from the literature review. Higgins (1967) used the IPAT Culture Fair Intelligence Test and the Stanford Achievement Test in a test-retest design with 94 upper-SES and 156 lower-SES sixth grade students. For one-half of the students no instructions other than the normal standardized instructions were given at the retest administration. For the other one-half of the sample instructions were given stating that large rewards, such as a party on school time, money, bus trips, and a free movie, would be given if the students improved their class average over the previous test. The results indicated increased performance for lower-SES students, but not for upper-SES students. Hollander (1968) examined the effects of verbal praise, verbal reproof, candy reward, and no reinforcement for fifth and sixth grade students on a group arithmetic test. A test-retest design was used with the contingencies in effect during the retest procedure. The following main results were achieved: (a) under reproof conditions fewer items were attempted and more errors were made, (b) students worked faster with candy, but more accurately with praise, and (c) older students responded better to praise and younger students responded better to candy. Sperling (1970) presented taped affective and non-affective directions to two groups of seventh grade children. The student sample was stratified on the basis of race, SES, and ability levels from previous achievement tests. The criterion measure was a group non-language arithmetic test. The following main results were

noted: (a) affective test administration resulted in significantly higher scores for all three ability levels in the lower-SES group, and (b) the treatment did not have a differential effect in the lower-SES white group, suggesting that the effect of the treatment in the lower-SES group as a whole was a function of the non-white segment. Finally, Sandy (1971) administered the Pinter-Cunningham Primary Test to two groups of students; 132 lower-SES and 55 middle-SES. He was unable to show a gain for lower-SES students under tangible reward conditions.

The evidence presented in the studies reviewed above indicate that the effects of different incentive conditions on standardized test performance is of a complex nature which may depend upon at least the interaction of the variables of age, race, incentive, test selected, and SES. In a similar manner Sattler & Theye (1967), from a review of the literature concerning variables in individual intelligence testing, offered the following conclusions and recommendations:

1. Minor changes in test procedures are more likely to effect specialized groups than normal groups.

2. Children are more susceptible than college age subjects to situational factors, especially discouragement.

3. [The examiner] performs numerous functions, such as establishing a relationship which enables the subject to perform at an effective level and evaluating the subject's motivational level, [which] is especially important because individual tests are administered, in the majority of cases, to subjects having motivational or adjustment problems.

4. Test directions, it would appear, must at times be supplemented with other materials to motivate the subject to work at his optimal level and in order to avoid ambiguity. [pp. 359-360]

Also to be noted is that one finding prevailed throughout all of the studies mentioned: though the test results of lower-SES and nonwhite students can be differentially effected by varying incentive conditions, they still score lower as a group than their middle-SES, white counterparts.

APPENDIX D

RELATED RESEARCH: ETHNICITY, SES, BILINGUALISM, AND TEST RESULTS

Evidence has existed since the inception of the use of standardized tests that a relationship of some type exists between ethnicity and test results. Terman (1918), in one of the earliest investigations of the use of the vocabulary test, reported a difference between Portuguese, Italian, and American children during the first few years in school. Negro-white comparisons have been extensively reviewed and commented upon (Shuey, 1958; Tumin, 1963; Pettigrew, 1964; Shuey, 1966). It is not the primary purpose of the present discussion to extend agreement or nonagreement to any of the conclusions reached in the above-mentioned reviews, but rather to use them as an indication of the continually prominent role which ethnicity places in the ongoing research related to standardized tests. The role of ethnicity as a variable, in relation to testing Spanish-American groups, will be reviewed in a later section.

Socio-economic status has also been recognized as bearing a relationship of some type to the results obtained by individuals and groups on standardized tests. The earliest work by Binet established differences between levels of student performance and occupational level of the student's father or guardian (Anastasi, 1968). Wechsler (1958, 1949) accounted for occupational level when establishing standardization groups for both the WAIS and the WISC. Neff (1938), in an early review of the relationship of socio-economic status and intelligence, concluded the following:

1. Wherever large groups of children have been measured by use of the standard tests of intelligence, it can be shown that socio-economic status is one of the variables that enters into the determination of intelligence test scores.

2. If social status has anything to do with opportunity for education, cultural stimulation, and intellectual attitude, then it is not surprising that social status and intelligence test scores are positively correlated.

3. [All summarized] studies tend to show that low cultural environment tends to depress IQ approximately to the degree agreed as characteristic of laborer's children, and that a high environment raises IQ correspondingly. [pp. 752-754]

Similar conclusions were stated by Shaw (1963) with regard to urban children in depressed areas. He also reported evidence that achievement lags for lower-SES children from urban areas.

Working with the WISC, Estes (1953; 1955) investigated the relationship between the performance of upper-SES and lower-SES boys. Lower-SES boys in the second grade scored lower than upper-SES boys, but this relationship did not hold for fifth grade boys or when the second grade boys were retested two years later. Laird (1957) worked with boys of fathers engaged in professional occupations and boys of fathers engaged in semi-skilled or unskilled occupations. These two groups were similar in age, place of residence, school attendance, size of family, race, nationality, physical status, and health. Even though these potential sources of variability were accounted for the professional group outscored the semi-skilled/unskilled group on the WISC, with the main difference being that the professional group scored higher on the Verbal subtests.

In a recent study Hemberger (1970) studied the relationship between small rural, medium, and large industrial urban student samples of differing SES. A factor analytic procedure was used to study the results of testing over a six year period with a battery consisting of the WISC,

Peabody Picture Vocabulary Test, and Ammon's Full Range Picture Vocabulary Test. The following results were obtained: (a) middle-SES students consistently exceeded the lower-SES students in the total number of factors identified from the battery, (b) four factors were continuous for both samples from preschool to fifth grade - Verbal Comprehension, Perceptual Organization, Numberical Ability, and Perception of Incongruity, and (c) two additional factors - Conceptual Foresight and Verbal Concept Formation, were continuous for the middle-SES students only. These findings are in line with previous factor analytic studies of the WISC (Littel, 1960), and also with the analysis of performance of rural and urban groups of students of varying SES levels on the Lorge-Thorndike Intelligence Test (Waters, 1971).

Fitch (1966) conducted a study in which he matched a group of 25 first and second grade students with a group of 25 fifth and sixth grade students on the variables of sex, SES, and IQ scores administered in the first grade. All students, for whom Spanish was the primary language in the first grade, were then administered the WISC and the Raven Progressive Matrices Test. The major findings of the study were: (a) Raven scores correlated higher with the WISC Verbal IQ scores at the first-second grade than at the fifth-sixth grade, (b) WISC Verbal IQ scores correlated more highly with WISC Performance IQ scores at the fifth-sixth grade than at the first-second grade, and (c) differences between WISC Verbal and Performance IQ scores were significantly greater for first-second grade students than for fifth-sixth grade students. The implication of this study is that by controlling for certain variables, i.e. sex, SES, and

overall IQ scores, the author was able to show differences in verbal and nonverbal IQ measures which could be attributed to another set of variables, i.e. ethnicity or bilingualism. To help substantiate this conjecture a study was reviewed which was conducted by Vasa (1971). In the Vasa study two groups of Mexican American students of differing age ranges were administered the WISC and the Hiskey-Nebraska Test of Learning Aptitude. The results of the study indicate a significant difference between WISC Verbal IQ scores and scores from the Hiskey-Nebraska Test of Learning Aptitude for the group with a mean age of 6 years. A significant difference was also shown between WISC Verbal and WISC Performance IQ scores for this lower age group. At the higher age, mean 10 years, no significant differences were shown.

The results of the studies just reviewed indicate that the variables previously mentioned, i.e. sex, age, SES, rural-urban residency, and race, all have their effects upon test performance. However, at least for one group of individuals, the Spanish American, one must also consider the effects of another variable, i.e. bilingualism.

Bilingualism and its Relationship to Test Results

Bilingualism has been a factor encountered in the testing of all groups who possess another language in addition to English. The early results of testing efforts of groups of Mexican descent, which are reviewed in detail below, lead to various explanations of the role which bilingualism played in determining test outcome. Sanchez (1932) concluded that bilingualism was not only a handicap acting upon language expression and language understanding, but also upon more "intricate psychological

processes" and presented an extra obstacle in learning and test performance of foreign language children. Pinter & Arsenian (1937) considered children of Mexican descent to be bilingual because they were raised in homes in which two languages were used interchangeably, and also because the families were segregated from the surrounding English-speaking population.

Arsenian (1945) made an extensive review of selected literature concerning the relationship of bilingualism to mental development. His conclusions, which emphasized bilingualism in general and some specific comments concerning Spanish American groups, were as follows:

1. Bilingual children as compared with monoglot children of the same age and environment are neither retarded nor accelerated in their mental development. This conclusion is especially evident when the two groups are compared on non-language tests of intelligence.

2. When verbal tests of intelligence are used for comparison in the majority of cases, the bilingual children fall short of their monoglot contemporaries, this disparity being greater the more verbal the content of the test is. This generalization must however, be limited by two observations:

    a. On the whole, the older the bilingual child and the higher the level of his educational attainment, the smaller is the discrepancy between his verbal intelligence test performance and the performance of a monoglot of the same age or educational attainment.

    b. The verbal intelligence tests show that the apparent retardation of bilingual children varies from place to place and from group to group. ...and in the Southwest of the United States the Spanish-speaking children according to these verbal intelligence tests show a serious handicap. [p. 85-86]

Recent literature reviews, Darcey (1963) and Jensen (1962a; 1962b) generally substantiate the above mentioned findings. Jensen (1962b)

concluded that many tests administered to bilingual groups were not sufficiently standardized with regard to socio-economic status, urbal-rural residency, and adjustment for test taking habits of the selected groups.

The complex nature of what is often referred to as bilingualism has been discussed by many investigators in this area. Soffietti (1955) indicates that test results indiscriminately ascribed to bilingualism are more likely the result of biculturalism; i.e. the living, either overtly or in one's internal life, in two distinct cultures with differing ways of life, beliefs, customs, and value systems. Similarily Liddle (1967) has cautioned that what may appear to be a language handicap may in fact be a handicap rising out of the parents low status and differing values. Fishman (1965) maintains that a variety of situations may exist so that no relationship, a negative relationship, or a positive relationship can be found between bilingualism and intelligence. The factors which he has delineated which help describe the type of relationship which may be found are: (a) social class and its relationship to bilingualism, (b) voluntary versus obligatory nature of bilingualism, (c) verbal stimulization and the extent of communicativeness within the socialization process of bilinguals, and (d) the prestige connected to being bilingual.

While some authorities give slight reference to the linguistic factor in bilingualism (Bloom, 1964), most consider it to be an important factor in a complex situation which effects the test performance of Spanish American students. Yamamoto (1964) took note of the close

association between ethnicity, bilingualism and retardation, while cautioning that the cause and effect relationship between the variables is unclear. Salazar (1970) maintains that a formal testing situation conducted in English has a tremendous demoralizing effect on students who use primarily Spanish in superordinate-subordinate situations. Severson & Guest (1970) suggest further that bilingualism and poverty may be linked in such a manner that instruments like the WISC, which require complex language skills, do not take into account important qualitative facets of language. In addition to the considerations of bilingualism already noted, Swanson & DeBlassie (1971) suggest that the aspects of encouragement of initiative and curiosity, planfulness, and achievement motivation must be considered.

The above discussion of bilingualism was included to emphasize the complex nature of that area of concern. In the discussion below the emphasis will be on reviewing how one bilingual group, i.e. Spanish American, scores on common standardized tests. The discussion is divided into two sections; studies conducted prior to 1950 and studies conducted after 1950.

Some of the earliest studies of children of Mexican descent were centered around their performance on standardized group intelligence tests. Sheldon (1924), Garth (1928), Sanchez (1932), and Garth & Johnson (1934) used a variety of tests to compare Mexican children and Anglo children. Two overall conclusions resulted from these early studies: (a) Mexican children scored lower than Anglo children, and (b) this difference in IQ value tended to increase with age. A series

of studies (Garretson, 1928; Delmet, 1930; Haught, 1931) was conducted using the Pinter-Cunningham Primary Mental Test. As was noted with the previous studies, Mexicans scored lower and their scores did not tend to increase with age. One study conducted somewhat later, Herr (1946) used the Pinter-Cunningham in a test-retest design with one-half of the students attending preschool during the test-retest interval. In this case the scores of the children who attended preschool increased significantly over those of the children not attending preschool.

Some consideration was given, prior to 1950, toward extending the use of nonverbal tests to Spanish American groups. Davenport (1932) administered the Goodenough Test to both Mexican and non-Mexican paired siblings in the first and third grade. The results indicated that the older Mexican sibling tended to score higher. Garth, Elson, & Morton (1936) used the Pinter Non-Language Intelligence Test and the Otis Classification Test to assess both Mexican and non-Mexican school children. The two main findings were that Mexicans scored lower on the verbal tests, but there were no differences between Mexican and non-Mexican students on the Non-Language Intelligence Test. Altus (1948) worked with a group of young males who were white, Negro, Indian, and Mexican (bilingual Americans of Mexican ancestory). Using a series of both verbal and nonverbal tests, he was able to demonstrate that score values for individuals and mean score values for the different groups could be changed significantly from one test to another.

Since 1950, Spanish Americans have been assessed by practically every test of intellectural ability which has been published. To show

the diversity of tests and some of the results obtained selected studies are reviewed below.

Ammons & Aguero (1950) reported the results of the use of the Full-Range Picture Vocabulary Test for a Spanish American school age group. Their data indicated little bilingual handicap at early ages on the Full-Range Picture Vocabulary Test, but a progressive difference, with Anglo student consistently scoring higher than Spanish-American students, occurred as age increased. Norman & Mead (1960) showed that this difference in scoring on the Full-Range Picture Vocabulary Test extended to the age of 20. Carlson & Henderson (1950) followed a group of Anglo and a group of Mexican American students for 5½ years. During this time the students were tested with the Pinter-Cunningham, Kuhlmann-Anderson, California Test of Mental Maturity, and Stanford-Binet. They report that in every case the mean IQ of the Mexican American group was significantly lower than the corresponding mean IQ of the Anglo group. Similar results, which show the Mexican Americans doing better on non-language tests than on language tests, but generally lower than their Anglo age mates, have been achieved for the Van Alstyne Picture Vocabulary Test (Karabinus & Hunt, 1969), David-Ells Test (Stablin, Willey, & Thompson, 1961), Otis Self-Administering Test of Mental Ability and Goodenough Draw-a-Man-Test (Johnson, 1953), California Short-Form Test of Mental Maturity (Kittell, 1959), Stanford-Binet and Form I of Point Scale of Performance Tests (Cook & Arthur, 1951), and Cattell's Test of g: Culture Free (Kidd, 1962).

Studies have been conducted using the WISC as a measure of intellectual ability for Spanish-Americans. Several of these studies are

reviewed below. Altus (1953), in a study comparing the WISC performance of Anglo and Spanish American fourth graders, showed a significant difference between the groups on Verbal IQ and all verbal subtests. Polomares (1967) and Polomares & Cummings (1967) reported on the results of using the WISC with a group of Spanish American school aged children in California. In these studies, at all grade levels, Performance IQ exceeded Verbal IQ and the older age groups showed less variability than the younger age groups. Christianson & Livermore (1970) compared the performance of lower-SES and middle-SES groups of Anglo and Spanish American students, ages 13-14, on the WISC. Again the largest discrepancies between groups occurred or the Verbal IQ scale and the lower-SES groups, Spanish-American and Anglo, scored lower than the middle-SES groups on the Performance IQ scale. Purl & Curtis (1970) compared Anglo, Negro, and Spanish American students in the first, second, and sixth grades on the WISC, Progressive Matrices, and Lorge-Thorndike. The results indicated that the predictive validity of the Progressive Matrices was inconsequential at the sixth grade for Spanish Americans, and also that the Lorge-Thorndike, which had the best predictive validity of any of the three instruments, was of least value when predicting Spanish American performance.

In a series of recent studies the WISC was used to evaluate Spanish American, Negro, and Anglo children who were enrolled in classes for the mentally retarded (Mercer 1970; Mercer, 1971; Mercer, 1972). In these studies the students scored in the characteristic manner, i.e. Performance IQ was 6-10 points higher than Verbal IQ. However, in this case

the students were also assessed with regard to adaptive behavior and socio-cultural status. In view of these results, and a process of comparing the student within his own socio-cultural group, Mercer (1970) concluded: (a) Spanish American children with cultural backgrounds most similar to those of Anglo children did as well on the WISC as the Anglo children on whom the test was normed and (b) using pluralistic diagnosis (having to score in the lowest 3% of one's own socio-cultural group on both IQ and adaptive behavior) there was no difference between ethnic groups for the percentage of students who were classified as mentally retarded, and no difference between the percentage of Spanish Americans in classes for mentally retarded and the percentage of Spanish Americans in the whole school. Evidence of the practical significance of the above findings can be gained by reference to Ross, DeYoung, & Cohen (1971) where a California court order is outlined which instructs schools to examine all Spanish Americans placed in special classes by using tests of their primary language and, also to develop new tests so that Spanish American students may be compared with their peers, and not the population as a whole.

As noted above, various experimental techniques, such as incentives, affective administration procedures, and optimized testing conditions have been used to attempt to alter the test results obtained by various groups. One special technique, a test-retest design or alternate group design in which a test is administered in both Spanish and English, has been utilized to study the test results obtained by Spanish-American groups. Studies of this type are reviewed below.

In an early study Mitchell (1937) used the Otis Group Intelligence Scale in a test-retest design with first, second, and third grade students who had at least one Mexican parent. The initial test was administered in English and was followed ten days later with a retest in Spanish on an alternate form. The main results obtained were: (a) for all three grades the difference in mean intelligence quotients was 9.28 points in favor of the Spanish testing, and (b) the correlation between Spanish and English administrations for all three grades was .72. Keston and Jimenez (1954) used the Stanford-Binet, given in Spanish and English, in a test-retest design with fourth grade Spanish-American students. In this case a correlation of only .36 was obtained. In a more recent study Riley (1968) used the Peabody Picture Vocabulary Test in a test-retest design with first grade Mexican American students. The main results obtained were: (a) the addition of Spanish to the testing procedure substantially improved word recognition skills, and (b) the tests in Spanish and English/Spanish (simultaneously) were more discriminating among individuals than the test in English. In a study using first grade Spanish American students, Mycue (1968) examined the results obtained on the Language Facility Test when the examiners were Anglo and Spanish American and the test was administered in Spanish and English. Students performed better in English when the examiner was Spanish American and best when directions were given in Spanish by a Spanish American examiner.

The WISC has been used in several studies as a measure to compare test results obtained for both Spanish and English test administrations. Holland (1960) used an administration procedure in which all directions

and items were presented first in English and then repeated in Spanish if they had not been understood. For 36 students in grades 1-5, scores were on the average 4.6 IQ points higher for the Spanish administration with the greatest discrepancies evident in grades one, two, and three. Galvan (1967) administered the WISC in both Spanish and English to a group of third, fourth, and fifth grade Spanish American students. The results indicated: (a) a lower Full Scale IQ when English was used during administration, (b) a significant correlation for the Performance IQ when administered in Spanish and English, and (c) a nonsignificant correlation for the Verbal IQ when administered in Spanish and English. Chandler & Plakos (1969) used the Spanish version of the WISC (Escala de inteligencia Wechsle para niros) to retest a group of rural and urban children of Mexican descent who were enrolled in classes for educable mentally retarded. The mean gain in IQ points was 13.15 and raised the classification for the group well above the point necessary for placement in classes for the educable mentally retarded. In a recent study Spanish American first grade students were tested with the WISC after having been equated in two groups on the basis of scores on the California Test of Mental Maturity (Swanson & DeBlassie, 1971). One half of the students received the directions and content of the WISC in English, while the other half had the directions and content translated into Spanish by a bilingual interpreter. The results indicated no difference between the groups for Verbal, Performance, or Full Scale IQ.

In light of the studies reviewed above, the following conclusions

appear warranted: (a) age, place of residence, degree of bilingualism, ethnicity of examiner, language of administration, and test selected for administration all bear some relationship to the results obtained, and (b) more sustained research is needed to help account for the conditions under which optimum test performance can be expected from Spanish American groups.

APPENDIX E

RELATED RESEARCH: EFFECTS OF INCENTIVES WITH SPANISH AMERICAN STUDENTS

In light of the special characteristics of the Mexican American student it seemed appropriate to review, in this separate section, the results of several studies concerning the effects of different types of incentives on performance of this group.

Steen (1966) matched three groups of Anglos and three groups of Mexican Americans on the variables of mental age, social class, sex, and chronological age. All students were then engaged in the criterion task of attempting to complete an unsolvable puzzle. There were three treatment procedures in which individual students were given immediate instructions based on group achievement, delayed instructions based on group achievement, or no instructions. The major result of the study indicated that Mexican American students receiving immediate instructions showed more achievement behavior than Mexican American students receiving postponed reinforcement. In a study which included students of European and Mexican descent Fujitani (1969) found no differences in preference for reinforcers, i.e. money, praise, and candy, between ethnic groups while performing on a pictorial identification task.

In a study conducted by Dain (1970) a group of 41 Negro and 38 Mexican American sixth grade students were compared on scores achieved on spelling tests under one of the following three conditions: (a) standard procedures, (b) teacher comments - ability oriented, and (c) teacher comments - effort oriented. The results indicated that treatment groups did not differ significantly on spelling scores. However, effort statements (try hard) were positively reinforcing for Mexican Americans but not for Negroes, while ability statements (you can) were positively re-

inforcing for Negroes but not for Mexican Americans. In an interesting study Firme (1970) examined the effects of two types of incentives, Mexican and Non-Mexican, on two types of behavior; achievement and socio-emotional, for 56 lower achieving Mexican American students differing on self-esteem. The basic finding reported was that children initially low on self-esteem showed their highest scores at post test when assigned to socio-emotional behavior treatments, while children initially high on self-esteem scored highest at post test in achievement behavior treatments. In both cases Mexican rewards were superior.

The final study to be reviewed deals with four lower SES cultural groups, i.e. Anglo, Negro, Spanish American, and Navaho (Hassett, 1970). The students were engaged in a ten minute marble dropping task under one of four incentive conditions: money, candy, personal praise, or performance directed praise. The criterion measures were rate of response and reinforcer effectiveness score. The following results were listed for the study: (a) reward condition on both criterion measures was significant, (b) candy differed significantly from the other three reward conditions, (c) the greatest difference was between candy and performance praise, (d) boys responded more to the two praise conditions than did girls, and (e) data on the Navaho group was excluded because they could not follow the directions for the task. The over-riding conclusion of the study was that lower class membership rather than cultural or racial factors influenced the unanimous response to the material reward conditions.